

REMARKS

In the Office Action mailed February 25, 2004, claims 1, 3-6, 10, 12, 14, 16-19, 22, 24, and 26-30 were rejected under 35 U.S.C. 102(e) as being anticipated by Mamyshev, (U.S. Patent No. 6,141,129); claims 1-8, 10-20, 22-26, and 29 were rejected under 35 U.S.C. 102(e) as being anticipated by Hamaide et al. (U.S. Patent No. 6,408,114); claims 2, 7-9, 11, 13, 15, 20, 21, 23, 25, 31, and 32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Mamyshev in view of Hamaide et al.; and claims 9, 21, 27, 28, and 30-32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hamaide et al. in view of Mamyshev. The foregoing rejections are respectfully traversed.

Claims 1, 4-10, 11, 14, and 26 are amended. Claims 4-10 are amended for clarification, unrelated to patentability. No new matter is presented. Claims 1-32 are pending and under consideration.

Mamyshev discloses optical regenerator bandpass filters 53, 64, 74, 85, 95 and 103-107 in Figs. 5-10. Mamyshev's optical bandpass filters have a center frequency, which is different from a center frequency of optical signal inputted into NLMs 52, 63, 73, 84, 94, 102 as shown in Figs. 5-10. Therefore, the center wavelength of the output optical signal outputted from Mamyshev's optical bandpass filter is different from the center wavelength of the optical signal inputted into the NLM. To make the center wavelength of the output optical signal of the filter equal to the center wavelength of the input optical signal, two optical signal regenerators 111, 112 are required as shown Fig. 11. Further, Mamyshev does not disclose that the extremely peaky fluctuation components c, c', in which the chirp is large and whose wavelength are outside of the transmission bands, are at all removed.

Hamaide discloses a transmission line 7 made up of legs TF of a dispersion-managed transmission optical fiber in Fig. 1. and discloses that the transmission line 7 has low mean dispersion for which there exists a soliton-type pulse whose characteristics (duration, chirp, etc.) vary periodically (refer to Col. 1, lines 44-46). But Hamaide's dispersion-managed transmission line reduces non-linear effects as described in Col. 1, lines 53-57. Therefore, Hamaide's transmission line is quite different from the optical waveguide structure of the present invention.

That is, Hamaide's dispersion managed transmission line 7 does not generate chirp actively into an optical signal for removing components having small chirp and large chip from the optical signal but rather suppresses chirp. Hamaide discloses a filter 25 in Figs. 2, 3. But solitons inputted into the filter 25 are transformed into pure Schrödinger solitons by a fiber 23 and are not output optical signals outputted from an optical waveguide structure for generating

chirp in an optical signal such as in the present invention.

Hamaide discloses a relationship between the energy of the solitons and their spectrum width for pure Schrödinger solitons and managed solitons in Fig. 3. But the disclosure about pure Schrödinger solitons and managed solitons does not relate to the amended claim 1 at all. Therefore, input signal of Hamaide's filter 25 is quite different from input signal of the filter of the present invention.

In contrast to the foregoing references relied upon, either alone or in combination, the present invention (as recited in each of independent claims 1, 14, and 26, using the recitation of claim 1 as an example) includes supplying an output optical signal output from "an optical waveguide structure" to "an optical filter having transmission bands at longer and shorter wavelength sides than a center wavelength of said output optical signal output from said waveguide structure to remove components in which said chirp is small and large for wavelength from said output optical signal, said transmission bands at longer and shorter wavelength sides being longer and shorter for a predetermined wavelength distant from said center wavelength".

Advantageously, the optical filter of the present invention has transmission bands at longer and shorter wavelength sides than the center wavelength of the output optical signal output from the waveguide structure, the transmission bands at longer and shorter wavelength sides being longer and shorter for a predetermined wavelength distant from said center wavelength. Optical components which have wavelength contained in the transmission band at the longer wavelength and optical components which have wavelength contained in the wavelength transmission band at the shorter wavelength pass the optical filter and are multiplexed into output optical signal of the filter.

The optical filter of the present invention includes transmission bands and removes the components in which the chirp is small, which are not broadened by the optical waveguide structure, whose wavelength remains at the center wavelength or near the center wavelength as shown in Fig. 5 of the present application by the optical waveguide structure.

As the spectrum of the output signal of the optical filter is as shown in Fig. 5 of the present application, the center wavelength of the optical signal outputted from the optical filter is the same as the center wavelength of the optical signal outputted from the optical filter is the same as the center wavelength of the optical signal inputted into the optical waveguide structure in case where the center wavelength of the optical signal inputted into the optical waveguide structure is same as the center wavelength of the output signal of the optical waveguide structure.

As shown in Fig. 5 of the present application, by both the transmission bands, extremely peaky fluctuation components, c, c' whose wavelength are outside of the transmission bands are removed. That is, the components in which the chirp is large and which are outside of the transmission bands are removed. The predetermined wavelength distance from the center wavelength is determined in view of suppressing intensity fluctuation of the optical signal and by the chip in optical signal by the nonlinear effect.

Dependent claims 2-13, 15-25, and 27-32 recite patentably distinguishing features of their own. For example, claim 3/1 recites "said optical filter comprises an optical bandstop filter having a center wavelength substantially coinciding with the center wavelength of said optical signal".

Withdrawal of the foregoing rejections is respectfully requested.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

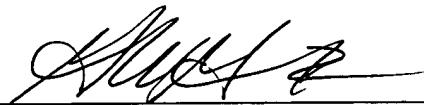
Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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